

Chapter 6: Mitigation

6.1 Relocation Assistance

Mitigation measures of displaced housing include relocating residents into available and comparable housing within their township or school district, depending on availability of housing in each location. Relocation assistance and benefits would be made available to all individuals displaced by the proposed US 31 Improvement Project in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1964: United States Code Title 42, Articles 4601 through 4655 (42 USC 4601-4655), Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs: Code of Federal Regulations, Title 49, Subtitle A, Part 24 (49 CFR 24), Title VI of the Civil Rights Act of 1964, and Indiana State Relocation Assistance: Indiana Code Title 8 Article 23 Chapter 17 (IC 8-23-17).

As per 49 CFR Part 24 Section 204 and IC 8-23-17 Section 28, no individual would be physically displaced until it is determined that adequate replacement housing is available. If, under normal circumstances, adequate housing could not be located in a timely manner, “Replacement Housing of Last Resort” (49 CFR 24 § 404) would be provided. Last resort housing includes, but is not limited to, rental assistance, additions to existing replacement dwellings, construction of new dwellings, and dwelling relocation.

Adequate replacement housing exists for all proposed displacements except for those in the under \$50,000 range (Table 6.1-1). These represent the displaced mobile home units displaced by the F Alternatives located in North Glen Village (Appendix A, Sheet 9). However, residential displacements within North Glen Village, located northwest of the intersection of US 31 and SR 32, may be mitigated on site. There are 14 mobile homes that will be potentially displaced by the project. However, as of February 1, 2003, four of these homes were vacant and for sale. Adequate replacement housing opportunities for the remaining families/individuals exist within the village. At least 16 mobile homes were observed as being for sale. As well, at least eight vacant lots were observed. Most of the displaced mobile homes could be physically relocated to these vacancies. A vacant lot and an unoccupied mobile home were also observed in the Eagletown Mobile Park, located in Eagletown, Indiana, approximately three miles west of Westfield on SR 32.

Benefits would be made available for all commercial properties displaced by the proposed US 31 Improvement Project in accordance with 42 USC 4601-4655, 49 CFR Part 24, Title VI of the Civil Rights Act of 1964, and IC 8-23-17. Mitigation measures of displaced businesses include moving expenses, retribution for direct loss of tangible property, and replacement property search (IC-8-23-17 §13).

**Table 6.1-1
Available Housing Units***

Price Range (\$K)	Carmel/Clay Township	Westfield/Washington Township	Total Homes Available within Project Area	Total Displaced Housing Units		
				No-Action	F1 through F6	G1 through G6
0 – 50	0	16**	0	0	14	0
50 – 100	10	7	17	0	2	5
100 – 150	43	64	107	0	23	17
150 – 200	80	55	135	0	7 -10	4 – 7
200 – 250	53	38	91	0	1	2
> 250	250	56	306	0	0	0
Total	436	220	679	0	47 – 50	28 - 31

* - Source: John McMullen, Realtor, Coldwell Banker/Kaiser (Data as of December 24, 2002)

** - Field observations of mobile homes for sale in North Glenn Village

6.2 Historic and Archaeological Resources Mitigation

According to federal regulations, adverse effects to historic properties require the Section 106 consulting parties to “develop and evaluate alternatives or modifications that could avoid, minimize or mitigate adverse effects” (36 CFR 800.6). Mitigation of an adverse effect of an undertaking may mean avoiding impact altogether, minimizing impact, rectifying impact, reducing or eliminating impact over time, or compensating for impact.

Following the determination of a single preferred alternative, a Section 106 Memorandum of Agreement (MOA) will be drafted to resolve all adversely affected historic resources. The FEIS will include a copy of the signed MOA.

In the event that any culturally significant finds such as funerary or human remains should be inadvertently discovered, the Delaware Tribe of Oklahoma requested that construction be halted immediately and that the tribe be contacted as soon as possible. In addition the tribe requests that the Indiana SHPO be contacted to verify whether a cultural resources survey has been conducted for the area; if a survey has been conducted the Delaware Tribe of Oklahoma requests a copy be forwarded to their Environmental Program Director. If a survey has not been completed the tribe requests that a survey is conducted prior to construction activities.

Additionally, the Miami Nation requests that if remains, which fall under the Native American Graves Protection and Repatriation Act (NAGPRA), are discovered during construction activities immediate consultation with the Indiana Historical Society, IDNR and all related parties take place.

6.3 Air Quality

The IDEM expressed that the project should be designed to minimize any impact on ambient air quality in or around the project vicinity (Appendix C). No violations of the NAAQS are projected for this project. Therefore, no air quality mitigation measures are required for the roadway improvements. During construction the contractor must comply with all federal, state, and local laws and regulations governing the control of air pollution. Adequate dust-control

measures must be maintained so as not to cause detriment to the safety, health, welfare, or comfort of any person or cause any damage to any property or business.

All bituminous and portland cement concrete proportioning plants and crushers must meet the requirements of IDEM. For any portable bituminous or concrete plant or crusher, the contractor must apply for a permit-to-install from the Permit Section, Air Quality Division, of the IDEM. Dust collectors must also be provided on all bituminous plants. Dry, fine aggregate material removed from the dryer exhaust by the dust collector must be returned to the dryer discharge unless otherwise directed by the project engineer.

6.4 Noise

6.4.1 Traffic

At all sensitive receivers where traffic noise impacts are predicted under the Build Alternatives, noise mitigation measures must be considered. The typical method of mitigating traffic noise impacts is to construct a noise barrier in the form of an earthen berm and/or vertical wall. According to INDOT's *Highway Traffic Noise Policy*, when impacts have been identified, there must be consideration of any reasonable and feasible measures that would abate the traffic noise impacts. Some abatement must be implemented if it is feasible and reasonable on any significant segment of the project. INDOT's definition of feasible and reasonable noise abatement is provided below.

6.4.2 Feasibility of Abatement

"Feasible" means that it is structurally and acoustically possible to attenuate traffic noise occurring at a receiver by at least 5 dBA $L_{eq}(h)$. Traffic noise abatement measures include traffic control measures (TCM), alteration of vertical or horizontal alignment, acquisition of buffering land, noise insulation of impacted receivers, and construction of traffic noise barriers.

6.4.3 Reasonableness of Abatement

"Reasonable" means that INDOT believes abatement of traffic noise impacts is prudent based on consideration of all the following factors:

1. The number of benefited receivers, those for whom the mitigation will benefit by at least 7 dBA $L_{eq}(h)$ at the noisiest hour conditions. This number is not necessarily the number of receivers impacted.
2. The cost of abatement on a benefited receiver basis and on a project level basis. The Indiana Department of Transportation has set the acceptable cost per benefited receiver range as \$20,000 - \$30,000. This cost should be arrived at by applying a square footage cost basis on the square footage of the noise barrier. A reasonable square footage cost basis will be determined by the Indiana Department of Transportation.
3. The severity of existing and future traffic noise levels. The absolute level and the increase of the future noise are two aspects with which to assess the severity of the noise impacts.
4. The timing of development near the project. The state considers it appropriate to give more consideration for development that occurs before initial highway construction.
5. The views of noise impacted residents. Potential negative impacts of noise barriers include unsightliness, shortened daylight, poor air circulation, degradation by weather, reduced safety, vandalism, and restriction of access for emergency vehicles.

Based on INDOT's *Highway Traffic Noise Policy*, the feasibility and reasonableness of noise barriers were evaluated at all locations in the project area where noise impacts were identified under Build Alternatives. Based on this evaluation, it was determined that noise barriers would be feasible at eight locations in the project area. Several locations where noise impacts are predicted consist of isolated or scattered residences. To provide significant noise reduction at these locations, a barrier's length is normally eight times the distance from the barrier to the residence. For example, a residence located 100 feet from the barrier would require a barrier 800 feet long and would cost \$240,000. Therefore, noise abatement is not considered reasonable in these instances and was not considered further. **However, noise barriers for all impacts will be analyzed again in the final design phase of this project.** At other locations where impacts are predicted, there is a more concentrated or cluster of residences and therefore additional evaluation was done.

The reasonableness of a noise barrier at each of these eight locations was then evaluated based on the five factors outlined in INDOT's policy (Table 6.4-1). A 12-foot high noise barrier was assumed for this evaluation.

Table 6.4-1
Summary of Reasonableness of Noise Abatement

Alternative ¹ And Location (Appendix A)	1. Number of Benefiting Receivers ²	2. Cost per benefiting receiver	3. Severity of existing and future traffic noise levels ³	4. Timing of development near the project ⁴	5. Views of impacted residents ⁵
West of F & G, South of 111 th : Meridian Suburban (Sheet 2)	12	\$38,125	Minor Impact = 12	Equal	For
East of F & G, North of 131 st : North Meridian Heights (Sheets 4A & 4B)	0	N/A	Minor Impact = 1	Equal	For
East of F & G, North of 136 th : RN140, RN145, RN150, & RN155 (Sheet 5)	2	\$120,000	Minor Impact = 4	Equal	For
West of F & G, North of 136 th : Autumn Lakes (Sheet 5)	0	N/A	No impact = 2 Minor Impact = 1	Equal	For
West of F, South of 161 st : Buena Vista and Farr Hills (Sheet 7)	0	N/A	No impact = 7 Minor Impact = 1	Equal	For
West of F, North of 181 st : North Glenn Village (Sheet 9)	8	\$107,813	No impact = 12 Minor Impact = 6	Equal	For
East of F, South of 196 th : Justin Morgan Drive (Sheets 10 and 11)	1	\$285,000	No Impact = 1 Minor Impact = 3	Equal	For
West of G, North of SR 32: Grassy Knoll (Sheets 16 & 17)	0	N/A	Moderate Impact=1	More	For

1. Alternative F = Alternatives F1 through F6; Alternative G = Alternatives G1 through G6.

2. This number is not necessarily the number of receivers impacted

3. Impacts classified as No Impact, Minor Impact, Moderate Impact or Severe Impact per INDOT Noise Policy.

4. "Equal" consideration for development that occurs after initial highway construction; "More" consideration for development that occurs before initial highway construction.

5. Assume that the impacted residents are "FOR" a noise barrier.

Four of the eight locations have benefiting receivers, however, none of the locations would be cost-effective based on INDOT's cost effectiveness criteria. The majority of the impacts are classified as "No Impact" or "Minor Impact", based on reasonableness evaluation from the *Impact Criteria for Determining Severity of Noise Impact for the Consideration of Noise Abatement* chart from INDOT's Noise Policy. Grassy Knoll receives more consideration because the residential development is along Alternatives G1 through G6, where a new alignment is proposed. Therefore, the development occurred before initial highway construction. It is also assumed that all impacted residents are "for" noise barriers. Based on these reasonableness factors, no noise barriers are recommended for this project.

Additional noise abatement measures were evaluated and found to be either unwarranted or infeasible for the Build Alternatives. Federal guidelines allow for the insulation of public use or non-profit institutional structures. Other noise abatement measures considered to be infeasible include altering the vertical or horizontal alignment, eliminating truck traffic, and reducing the speed limit.

6.5 Wetland Mitigation

Wetland mitigation is based on requirements set forth in Section 404 of the Clean Water Act (33 USC 1344). In 1990, IDNR, USFWS, and INDOT signed a Memorandum of Understanding (MOU), which established standard mitigation ratios for impacts to wetland resources. While not signatory to the agreement, the Corps and IDEM typically follow the MOU. The agreed mitigation ratios of 2:1 for emergent systems, 3:1 for scrub-shrub systems, and 4:1 for forested systems (Table 6.5-1) are still used as guidance for regulatory determination of permit applicant's request for wetland mitigation. The Corps and IDEM may require more or less impact acreage depending on the quality, location, size, function, and value of the wetland. Compensatory mitigation for disturbances to natural resources is the final alternative that should be considered when a project is planned. The sequence to follow during project planning is 1) avoidance of disturbance; 2) minimization of disturbance; and 3) where these two alternatives do not dispose of the issue, compensatory mitigation for the loss of natural resources.

Compensatory wetland mitigation for transportation projects traditionally requires restoration of wetland conditions at an off-site location that is currently not identified as a wetland by Corps standards. This is generally followed by 3 to 5 years of monitoring to ensure the wetland's proper development. Several locations exhibiting characteristics for potential wetland mitigation sites have been identified throughout the project area (Figure 6.5-1). Potential available acreage for mitigation is greater than 1,200.

As well, according to the FWS in a letter dated February 12, 2001, mitigation for upland (non-wetland) forest loss within the Cool Creek floodplain should be addressed by reforestation within the same floodplain (Appendix C, Early Coordination).

**Table 6.5-1
Wetland Mitigation Acreage**

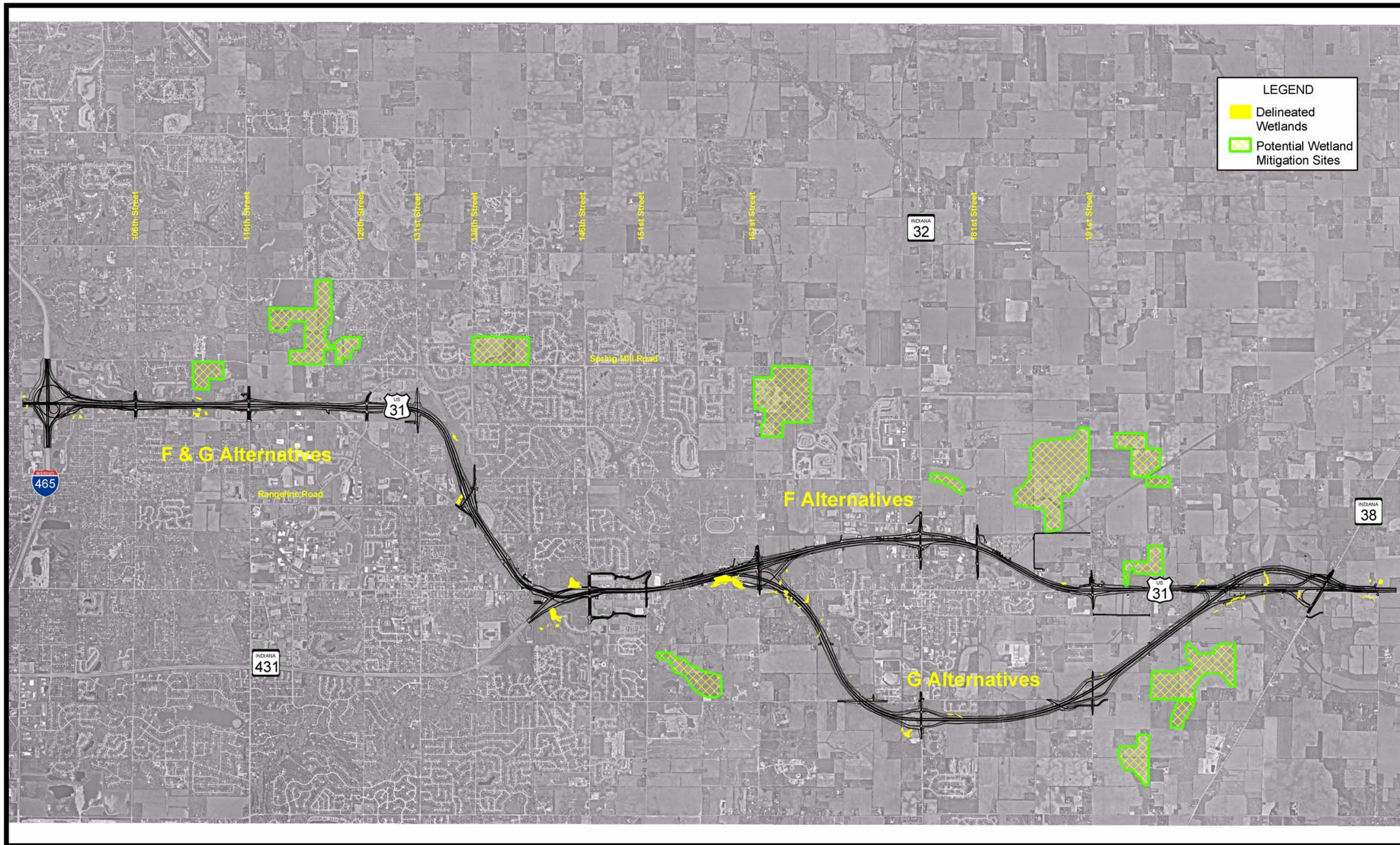
Alternatives	Wetland Type	Acres of Impact	Mitigation Ratio	Mitigation Acreage
No-Action	Emergent	0	2:1	0
	Scrub-shrub	0	3:1	0
	Forested	0	4:1	0
	Total			0
F1 – F6	Emergent	0.60	2:1	1.20
	Scrub-shrub	0.05	3:1	0.15
	Forested	0.27 - 2.67	4:1	1.08 - 10.68
	Total			2.43 - 12.03
G1 – G6	Emergent	1.95	2:1	3.9
	Scrub-shrub	0.34	3:1	1.02
	Forested	5.13 - 7.53	4:1	20.52 - 30.12
	Total			25.44 - 35.04

6.6 Mitigation of Visual Impacts and Aesthetics

The purpose of this section is to identify visual mitigation measures associated with the visual impacts. Potential aesthetic enhancements for possible incorporation into the project would reflect input from the affected communities. The adjacent communities of Carmel, Clay Township, Westfield, and Washington Township, as well as Hamilton County, offer natural, cultural, historical, and scenic resources. The setting and character of the project area and the needs of the highway users are factors that must be considered within the US 31 corridor upgrade. Impacts would result primarily from road reconstruction for the upgrade of US 31 to an urban freeway and include elements such as cut and fill slopes, increased pavement surface, removal of vegetation, bridges, lighting standards, guardrails, and other roadway features.

The US 31 project would incorporate cost-effective design features for the purpose of mitigating adverse aesthetic impacts. Specific mitigation measures and aesthetic design features should be refined during the final design phase, coordinated with local communities. These communities will be granted the opportunity to underwrite enhanced design amenities and/or architectural elements and maintenance.

Interchanges and overpasses along US 31 could provide effective opportunities for incorporation of reasonable aesthetic enhancements. Whenever possible, opportunities for maintaining the views of existing landmarks within the visual corridor could also be included in the project. Supplemental gateway elements, including distinctive signage, lighting and landscaping associated with entry features, if so desired by the communities, would be integrated into the final design where feasible based upon current safety standards and funding availability.



Walls, landscaping, and signage should not block the views of the corporate office buildings and commercial facilities within the visual corridor. Mitigation measures involving landscaping, bridge treatments, lighting, signing, and contour grading could to be incorporated into the final design to minimize these potential impacts. Where practicable, design elements could match prominent architectural elements and styles within each of the adjacent communities. The design for these structures could be incorporated into the landscape and site context to lessen its visual impact upon the corridor.

Natural topography, storm water detention ponds, trees, shrubs, and native Indiana prairie grasses would also provide continuity throughout the landscape and influence the view of the roadway. Landscape plantings within established safety guidelines and clear zone setbacks could be used to mitigate impacts and buffer noise and undesired views. The project should be designed to retain existing trees and vegetation to the extent possible to create a natural screen between the roadway and residential areas.

Additional plantings could be introduced in areas where impacts are unavoidable, especially within areas where vegetation is limited. In areas where trees are being removed for additional right-of-way, irregular feather cut lines with selective tree removal should be considered.

6.7 Construction

6.7.1 Noise

One method of controlling construction noise is to establish a maximum level of noise that construction operators can generate. Contract specifications will establish construction noise limits for sensitive areas. Several mitigation procedures can be followed to assist in minimizing the temporary impacts of construction noise.

6.7.2 Erosion Control

Mitigation measures outlined by the FWS in a letter dated February 12, 2001 include the following (Appendix C, Early Coordination):

- Design the road reconstruction to minimize impacts on the remaining woodlots, especially wooded riparian areas. In particular the area east of US 31 and north of 156th Street, where the highway is adjacent to the forested floodplain of Cool Creek.
- Post 'Do not disturb' signs at the construction zone boundaries and do not clear trees or understory vegetation outside of the boundary.
- Implement temporary erosion and siltation control devices such covering exposed areas with erosion control materials and grading slopes to retain runoff in basins.
- Revegetate all disturbed soil areas immediately upon project completion.

6.7.3 Stream Crossings

Mitigation measures outlined by the FWS in a letter dated February 12, 2001 include the following (Appendix C, Early Coordination):

- Restrict low-water work to placement of piers, pilings and/or footings, shaping of spill slopes around the bridge abutments, and placement of riprap.

- Restrict channel work and vegetation clearing to within the width of the normal approach road right-of-way.
- Minimize the extent of artificial bank stabilization.
- If riprap is utilized for bank stabilization, extend it below low-water elevation to provide aquatic habitat.
- Avoid channel work during the fish spawning season (April 1 through June 30).

6.7.4 Wellhead Protection Zones

As per guidelines set forth in the Wellhead Protection Management Plans for Westfield (PWSID# IN5229021) and Western Hamilton County (PWSID# IN5229009), any new development or upgrade of existing facilities within a Wellhead Protection Zone will require coordination with the Westfield Utilities Department.

6.7.5 Permits

The following Federal permits relating to terrestrial and aquatic resources may be required for the proposed project.

Agency	Permit
United States Army Corps of Engineers (USACE)	Section 404 Permit for the Discharge of Dredged or Fill Material into waters of the US (e.g.; streams and wetlands)

The following permits from the State of Indiana relating to terrestrial and aquatic resources may be required for the proposed project.

Agency	Permit
Indiana Department of Environmental Management (IDEM)	Section 401 Water Quality Certification
IDEM	National Pollutant Discharge Elimination System (NPDES)
Indiana Department of Natural Resources (IDNR)	Construction in a Floodway

The following agencies regulate a “permit by rule.” Though no actual permit is issued, correspondence is required with these agencies prior to construction activities.

Agency	Permit By Rule
IDEM (facilitated by SWCD)	Storm Water runoff Associated with Construction Activity (Rule 5)
Hamilton County Drainage Board	Legal Drains (Hamilton County Code 36-9-27-17)
Westfield Utilities Department	Wellhead Protection Zone

6.8 Design

6.8.1 Section 4(f) Avoidance

This project would require no permanent or temporary use of the following Section 4(f) resources:

- Westfield-Washington School Campus
 - Football Field & Track Facility
 - Playgrounds
 - Soccer & Baseball Fields
 - Tennis Courts
- MacGregor Park
- Monon Greenway
- Hunt House
- Lindley Farm
- Proposed Westfield Historic District
- Cool Creek Park
- Asa Bales Park